



## Asia: Land of Extremes

**What are the extremes of Asia's climate?** Asia is a big place. As world's largest continent, it covers over 8% of the Earth's surface and nearly 30% of its land area. Such a large continent is bound to have extremes of weather and climate. What if you could investigate the continent, exploring the extremes of Asia's climate? Using National Geographic's MapMachine, an online GIS (Geographic Information System), you can!

**Your Mission:** Explore Asia's climate extremes. Be an investigative geographer and think about why these extremes are located where they are. Think about the relationship between climate, latitude-longitude, and elevation.

1. **Access the National Geographic MapMachine** to begin your voyage!  
<http://www.nationalgeographic.com/maps>

Select "Road Map," type in "Asia" in the box and click "Find a Place," as follows:

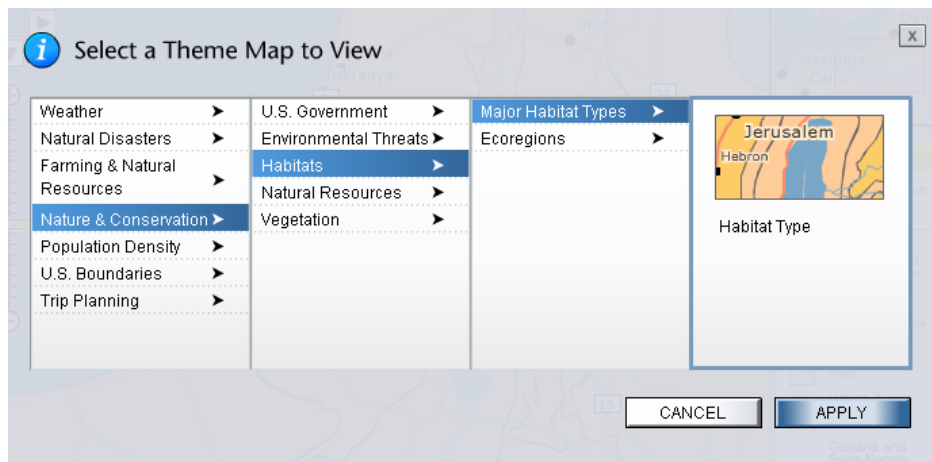


**2. Burning Up!** The hottest temperature ever recorded in Asia was 129 degrees F (54 degrees C) on 22 June 1942 in Tirat Tsvi.

Enter Tirat Tsvi in the “Find A Place” box. Examine the scale.

### In what country is Tirat Tsvi?

Examine the major habitat type here. Under More Theme Maps, change the map to a major habitat type, as shown below. These habitat types are really ecoregions—areas with similar plants, soils, animals, elevations, and climates.



Ecoregions are unique, and most are threatened by forces, most of which are human-caused. **What are the main threats to this ecoregion?**

Examine some weather maps such as average temperature, January temperature, and July temperature.

### Why do you think it gets so hot in this part of Asia?

Look at a physical map and notice how low the elevation is here.

### What effect does the elevation have on the temperatures here?

### Does it surprise you that the hottest temperature was recorded in June here?

### What is the event that has to do with climate and the Earth's rotation that happens each year in late June?

### Why does it make sense that the hot day in 1942 occurred near this annual event?



**What is the average precipitation here?**

**What is the average July temperature here?**

**What is the average January temperature here? Is it hot here in the winter, or just in the summer?**

Zoom to where you live and back to this area. **How is the climate here similar or different from the climate where you live? Why?**

**What form of precipitation do you think is most common here? How do you think the people of Tirat Tsvi deal with the heat?**

**How do you think the hot weather affects the economy and the types of jobs that people have in this region?**

**3. Freezing Cold!** As hot as it gets in the area you were just examining, and other places in Asia, the continent also experiences very cold temperatures as well. The coldest temperature ever recorded in Asia was -90 degrees F (-68 degrees C) on 7 February 1892 in Verkhoyansk.

**What is the difference between the hottest and the coldest temperatures in Asia, in degrees F and in degrees C?**

Enter Verkhoyansk in the "Find A Place" box and select the first choice that appears.

**In what country is Verkhoyansk?**

Change the map to a major habitat map.

**What is the name of the ecoregion here?**

Read about this ecoregion on:

<http://www.nationalgeographic.com/wildworld/profiles/terrestrial/pa/pa0605.html>

**List 3 types of animals that are found here and 3 types of plants. What are the main threats to this ecoregion?**

Go back to your map.

Zoom out. **What is the name of the closest ocean to this area?**

**Why do you think it is so cold here?**



Use More Theme Maps to access weather maps to answer the following questions:

**What is the average precipitation here?**

**What is the average July temperature here? Is Verkhoyansk cold in July, or just in the winter? Why?**

**What form of precipitation do you think is most common here?  
How do you think the people of Verkhoyansk deal with the cold?**

**How do you think the cold weather affects the economy and the types of jobs that people have in this region?**

Zoom to where you live and back to this area. **How is the climate here similar or different from the climate where you live? Why?**

4. **Where's the Umbrella?** The wettest place in Asia is Mawsynram. It receives an average of 467 inches (1,194 cm) of rainfall each year.

**How many feet of rain does Mawsynram receive each year?**

**How many meters of rain does Mawsynram receive each year?**

Enter Mawsynram in the "Find A Place" box.

**In what country is Mawsynram?**

Change the map to a January precipitation map.

**What patterns do you notice? How does this area compare to other areas around it?**

Change the map to a July precipitation map.

**What patterns do you notice? How does this area compare to other areas around it? Does this area receive more precipitation in January or July?**

Zoom to the area where you live.

**Does your area receive more precipitation in January or in July? Does the type of precipitation in your area differ between January and July? How?**

Change the map to a major habitat map.

**What is the name of the ecoregion here?**



Read about this ecoregion on:

<http://www.nationalgeographic.com/wildworld/profiles/terrestrial/im/im0120.html>

**List 3 types of animals that are found here and 3 types of plants. What are the main threats to this ecoregion?**

Go back to your map.

Zoom out. **What is the name of the closest ocean to this area?**

**Why do you think it is so wet here?**

**How do you think the people of Mawsynram deal with all of their rainfall?**

**How do you think that an overabundance of water affects the economy and the types of jobs that people have in this region?**

5. **Where's the Rain?** The driest place in Asia is Aden. It receives an average of just 1.8 inches (4.6 cm) of rainfall each year.

**Can you estimate with your finger and thumb how much rain this is? Draw this amount in the space at the left.**

**Do you think this amount is more or less precipitation than your own community receives each year?**

**What is the difference between the driest and wettest places in Asia in inches and in centimeters per year?**

Enter Aden in the "Find A Place" box. Select the first choice in the list. On your map, notice that the city of Aden is to the west of the center of the map.

**In what country is Aden?**

Change the map to a January precipitation map.

**What patterns do you notice? How does this area compare to other areas around it?**

Change the map to a July precipitation map.

**What patterns do you notice? How does this area compare to other areas around it? Does this area receive more precipitation in January or July?**



Zoom to the area where you live.

**Does your area receive more precipitation in January or in July?**

**Does the type of precipitation differ between January and July?  
How?**

**Do you think the type of precipitation differs between January and July in Aden? Why or why not?**

Often, places near an ocean or sea receive more precipitation than areas far from large bodies of water. **Is Aden on a coastline?**

Zoom out to answer the following question. **What is the body of water that Aden is adjacent to?**

Often, areas near the sea receive water that has evaporated from the nearby ocean. **Why do you think it is so dry in Aden, despite the fact that it is adjacent to a large body of water?**

Change the map to a major habitat map.

**What is the name of the ecoregion here?**

Read about this ecoregion on:

<http://www.nationalgeographic.com/wildworld/profiles/terrestrial/im/im0120.html>

**List 3 types of animals that are found here and 3 types of plants. What are the main threats to this ecoregion?**

Zoom out. **What is the name of the closest ocean to this area?**

**How and from where do you think the people of Aden get their water?**

**How do you think that a lack of water affects the economy and the types of jobs that people have in this region?**

**6. Dig Deeper.** Conduct some research to determine other areas in Asia that are very hot and very cold. Use the MapMachine to investigate these places. **How are they similar and different from Tirat Tsvi and Verkoyansk?**

Conduct some research to determine other areas in Asia that are very wet and very dry. Use the MapMachine to investigate these places. **How are they similar and different from Mawsynram and Aden?**



You have used an online GIS to investigate Asia. Use other web-based mapping tools such as the 3-D ArcGIS Explorer (<http://www.esri.com/arcgisexplorer>), ArcWeb Explorer (<http://www.arcwebservices.com/awx>), and WorldMapper (<http://www.worldmapper.org>) to deepen your understanding of the continent.

Use a desktop GIS such as ArcView (<http://www.esri.com/arcview>) together with lessons on <http://www.esri.com/gaw> to ask questions and explore spatial relationships among population, biodiversity, climate, trade, elevation, culture, and other aspects of this fascinating continent.

Print your own high-resolution Asia political map on:  
<http://plasma.nationalgeographic.com/pdf/asiapol.pdf>

Print your own high-resolution Asia physical map on:  
<http://plasma.nationalgeographic.com/pdf/asiaphy.pdf>

Travel to Asia someday! Use the National Geographic travel planner below to plan your trip!  
[http://www3.nationalgeographic.com/places/continents/continent\\_asia.html](http://www3.nationalgeographic.com/places/continents/continent_asia.html)

